133 river as it flows through gorge, but from e. mouth of gorge for 60 mi. downstream there is drop of 50 ft. per mi. in river's course. There are 2 periods of high water in Kern r.; one during winter rain-flood from Jan.-March, second during summer snow-flood, from May-July; lowest water occurs in October (Gifford and Schenck, 17). Minimum flow of Kern in dry season 2700-3000 cu. ft. per second, in season greatest capacity over 19000 cu. ft. per second (Pen Pictures, 248).

133 Three valleys lie at 2500-3000 ft. elevation.
●132 They are in a climatic province which is semi-arid, with mesothermal temperature and summer deficiency of rainfall (Thornthwaite, pl. 3). Temperatures from 110-115° F. not uncommon in July-August; winters not severe, but generally some snow falls in valleys, more on foothills, and there are always heavy snows in mts. Precipitation records for Kernville, in Kern valley, are:

Year	Rainfall (in inches)	No rainfall
1924	6.48	May-September (inclusive)
1925	7.43	September
1926	11.66	June-September (inclusive)
1927	10.37	May-September (inclusive)
1928	6.47	June-September (inclusive)
1929	5.04	July, Aug., Oct.-Dec.
1930	6.97 plus 19 in. snow	June-October (inclusive)
1931	9.92	May, September
1932	7.34	July-November (inclusive)

[312] Previous to white settlement and diversion of water for agriculture, South Fork valley contained 2 large lakes, W of Onyx, NW of Weldon on
[175] Jesus ranch (SM). In 1776 Garcés, writing of unaugmented Kern near Kernville, says, "On this famous river, which I named Rio de San Felipe, there are abundant pastures, famous woods, and much irrigated ground (tierra de regadio)" (Garcés, 282). In foothills which enclose valleys are numerous hot and cold springs and intermittently flowing streams.

137 Vegetation of 3 valleys and lower foothill regions mixed; Shantz and Zon include valleys in chaparral area; my botanical collections from valley-foothill region contain specimens from desert, foothill, and Great Basin floral areas. This mixed vegetation area extends in E-W line across s. base of Tübatulabal territory. N of it are several different forest belts extending in N-S line; on w. edge of area along Greenhorn mts., is spruce-fir strip; E of this along canyon of unaugmented Kern strip of yellow pine-sugar pine forest; E of this another spruce-fir strip and finally on e. edge of Tübatulabal territory strip of piñon-juniper forest (Shantz and Zon). In extreme n. part of Tübatulabal area, on w. slope of Sierras, is found subalpine forest and, at higher altitudes, alpine communities (Klyver, 8). In terms of Merriam's life zones, using tree indicators of Grinnell and Storer (Grinnell and

291 These 2 pieces were then seamed together from
281 front of sole as far up as ankle and also seamed to each side of back piece. In front, from ankle upward 2 side pieces were tied together with 2 sets of buckskin thongs; sometimes upper set of thongs was wrapped around leg and tied either in
[314] front or back. To make soles wear longer, melted pitch from Digger pine smeared over outside of
[412] soles (FP). Deerbone awl used to punch holes for seams, which were stitched with sinew. Moccasins made by men; worn by men, women in summer, "not in rainy weather" (SM), when hunting, wood gathering, piñon gathering, etc.; children also wore them if "going some place," but footgear was not worn habitually or on short trips.

Sandals (same name as moccasins) were made of heavy buckskin sole to which a straight strip of buckskin 3 in. wide, 8 in. long was sewed in back (fig. 4; Mus. cat. no. 1-28227, 15-10638). When worn, this buckskin flap was brought upward

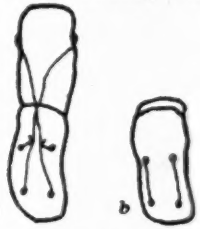

Fig. 4. Sandal. a, front view, showing strap arrangement; b, under side of sole, with strap.

to lie flat against back part of lower leg. Flap secured against leg by long buckskin thong, middle part of which held flap against lower leg. Ends of thong were brought forward on either side of leg, crossed in front over instep and threaded downward through 2 slits on each side of sole at instep; ends were then run up on under surface of sole to 2 holes underneath great and 4th toes and threaded up through these 2 holes. One end of thong passed between great and first toe, other between 3d and 4th toe; ends tied to upper sections of thong just below point where these were crossed over instep. Such sandals were used only when roasting piñons, to protect feet "when there was a hot fire to walk around" (SM). Fiber sandals never made, used.

292 Snowshoes not used, there being "not much snow
● 132 in the valley" where majority of semipermanent winter settlements were situated.

302 Coiffure.- Men wore hair long, loose (SM); sometimes parted it in middle and tied it in back (FP); never braided it. Women wore hair long, loose, parted, banged in front (Gayton, 1929, pl. 97a, b); banging done by holding front
[372] hair out from forehead in bunch, burning ends off with glowing stick of Atriplex canescens James (cĭw'wĭ·ĭbĭ·l). Woman's back hair sometimes braided, tied (FP wore hair thus; aboriginal?). When pounding acorns, otherwise employed in hot